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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,470	03/30/2006	Naohide Ogawa	59349.00031	2973

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EXAMINER	
MCCLOUD, RENATA D	
ART UNIT	**PAPER NUMBER**
2837	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/540,470	OGAWA ET AL.	
	Examiner	Art Unit	
	Renata McCloud	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12,13 and 20-31* is/are rejected.

7)☒ Claim(s) *14-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/23/05,3/30/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takenaka et al (US 6064167) in view of Inoue et al (US 6381515)

Claim 12: Takenaka et al teach, in embodiment 1, a system for detecting abnormality of a mobile robot having at least a drive motor (fig 2: 19/8, 18/5) an internal sensor (fig. 3: 26) that senses a quantity of state of the internal of the robot (col. 8:40-47) and a control unit (fig. 3:13) constituted by an onboard microcomputer (col.6: 60-62) that operates the drive motor based on the quantity of state obtained from an output of the internal sensor (26) to move, the control unit comprising: a. self-diagnosis means (fig. 3:13/27) for self-diagnosing whether the quantity of state is an abnormal value (col. 6:50-56), or whether at least one of onboard equipments mounted on the robot including at least the drive motor and the internal sensor is abnormal; b. abnormality information outputting means (fig. 3:13/28) for outputting, when an abnormality is self-diagnosed by the self-diagnosis means (fig. 3: 27), information of the abnormality affixed with a time on which the abnormality occurred (col. 9:35-41; col. 19:5-10); and c. abnormality information storing means (fig 3:29) for storing the output of the abnormality information outputting means in an internal memory provided in the control unit (fig. 3:13; col. 19:4-8). Embodiment 1 of Takenaka et al do not teach that the abnormality information may be output to an external memory outside the robot. An alternative embodiment of Takenaka et al teach that

the abnormality information may be output to an external memory outside the robot (col. 19:4-19). The embodiments of Takenaka et al do not teach both an internal memory and an external memory outside the robot. Inoue et al teach a mobile robot having both an internal memory (figs. 1-2:23) and an external memory (figs 1-2:24) outside of the robot (col. 5:55-59). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus taught by embodiment 1 of Takenaka et al to send abnormality information to an external memory as taught by the alternative embodiment of Takenaka et al, and to have both an internal memory and a memory outside the robot as taught by Inoue et al in order to store information individually according with the type of data and applications based on the controller and to prevent the modification of the data if one memory is removed.

Claim 13: Takenaka et al teach a system for detecting abnormality of a mobile robot having at least a drive motor (fig 2: 19/8, 18/5) an internal sensor (fig. 3:26) that senses a quantity of state of the internal of the robot (col. 8:40-47) and a control unit (fig. 3:13) constituted by an onboard microcomputer (col.6: 60-62) that operates the drive motor based on the quantity of state obtained from an output of the internal sensor (26) to move, the control unit comprising: a. self-diagnosis means (13/27) for self-diagnosing whether the quantity of state is an abnormal value (col. 6:50-56), or whether at least one of onboard equipments mounted on the robot including at least the drive motor and the internal sensor is abnormal; b. abnormality information outputting means (13/28) for outputting, when an abnormality is self-diagnosed by the self-diagnosis means (27), information of the abnormality affixed with a time on which the abnormality occurred (col. 9:35-41; col. 19:5-10); and c. abnormality information storing means (29) for storing the output of the abnormality information outputting means together with a parameter indicative of the quantity state of the robot (col. 9:25-41) in an internal memory provided in the control unit (13; col. 19:4-8). Embodiment 1 of Takenaka et al do not teach that

the abnormality information may be output to an external memory outside the robot. An alternative embodiment of Takenaka et al teach that the abnormality information may be output to an external memory outside the robot (col. 19:4-19). The embodiments of Takenaka et al do not teach both an internal memory and an external memory outside the robot. Inoue et al teach a mobile robot having both an internal memory (figs. 1-2:23) and an external memory (figs 1-2:24) outside of the robot (col. 5:55-59). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus taught by Takenaka et al embodiment 1 to send abnormality information to an external memory as taught by the alternative embodiment of Takenaka et al, and to have both an internal memory and a memory outside the robot as taught by Inoue et al in order to store information individually according with the type of data and applications based on the controller and to prevent the modification of the data if one memory is removed.

3. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takenaka et al (US 6064167) in view Inoue et al (US 6381515), as applied to claims 12 and 13 above and further in view of Yamamoto (US 6330494).

Claims 20, 21: Takenaka et al and Inoue et al teach the limitations of claims 12,13. Referring to claims 20, 21 they do not teach the onboard equipments include an external sensor that generates an output indicative of taken images. Yamamoto teaches a robot having onboard equipments that include an external sensor (fig. 2: 43) that generates an output indicative of taken images (col. 10:6-16). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus taught by Takenaka et al and Inoue et al to have a camera as taught by Yamamoto in order to detect abnormal posture of the robot.

4. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takenaka et al (US 6064167) in view of Inoue et al (US 6381515), as applied to claims 12 and 13 above, and further in view of Kuroki (US 6438454).

Claims 24,25: Takenaka et al and Inoue et al teach the limitations of claims 12,13. Referring to claims 24,25 they do not teach the onboard equipments include sensors that detect a current supplied to the drive motor and a temperature of the drive motor, and the self-diagnosis means self-diagnoses that the drive motor is abnormal when at least one of the detected current and temperature is not within a corresponding one of predetermined ranges set respectively with respect to the current and temperature. Kuroki teaches a robot having onboard equipments that include sensors (fig. 5:357) that detect a current supplied to the drive motor and a temperature of the drive motor, and self-diagnosis means that self-diagnoses that the drive motor is abnormal when at least one of the detected current and temperature is not within a corresponding one of predetermined ranges set respectively with respect to the current and temperature (col. 11:39-47). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus taught by Takenaka et al and Inoue et al to have sensors as taught by Kuroki in order to determine when the robot fails.

Claims 26,27: Takenaka et al and Inoue et al teach the limitations of claims 12,13. Referring to claims 25,26 Takenaka et al teach a battery (fig. 2:15) supplying current to the control unit (fig. 2:13) and the motor (col. 6:56-60) and a voltage sensor (fig. 2:24) that generates an output indicative of a voltage of the battery (col. 7:61-64), and the self-diagnosis means (fig. 3:27) self-diagnoses an abnormality when the battery capacity is smaller than a predetermined value (col. 16:59-63). They do not teach the self-diagnosis means self-diagnoses that the battery is abnormal when the output of the voltage sensor is smaller than a

predetermined value. Kuroki teaches a robot having onboard equipments including a battery that supplies a current to the control unit and the drive motor and a voltage sensor (354A; col. 10:22-26) that generates an output indicative of a voltage of the battery, and self-diagnosis means that self-diagnoses that the battery is abnormal when the output of the voltage sensor is smaller than a predetermined value (col. 11:57-62). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus taught by Takenaka et al and Inoue et al diagnose the battery as taught by Kuroki in order to determine when a failure will occur.

5. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takenaka et al (US 6064167) in view of Inoue et al (US 6381515), as applied to claims 12 and 13 above, and further in view of Ogure et al (US6684130)

Claims 28, 29: Takenaka et al and Inoue et al teach the limitations of claims 12,13. Referring to claims 28, 29, they do not teach the onboard equipments include a voice recognition system that enables voice communication with an operator. Ogure et al teach a robot having onboard equipments including a voice recognition system that enables voice communication with an operator (col. 10:11-34). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus taught by Takenaka et al and Inoue et al to have voice recognition as taught by Ogure et al in order to prevent unauthorized users from commanding the robot.

6. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takenaka et al (US 6064167) in view of Inoue et al (US 6381515),), as applied to claims 12 and 13 above, and further in view of Chen (US 5396160)

Claims 30,31: Takenaka et al and Inoue et al teach the limitations of claims 12,13. Referring to claims 30,31 Inoue et al teach an operator's operation control unit (fig. 5:40) provided outside the robot and comprising a microcomputer that includes the external memory (col. 6:38-43); and communication means connecting the control unit (20) and the operator's operation control unit (40) for establishing communication therebetween. They do not teach the self-diagnosis means self-diagnoses whether the communication means is abnormal. Chen et al teach robot having an operators control unit (12) comprising a microcomputer and communication means connecting the control unit and the operators control unit.determining a communications error between the robot (16) and the controller (col. 6:56-7:2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus taught by Takenaka et al and Inoue et al determine a communications error as taught by Chen in order to ensure the robot is operating properly.

Allowable Subject Matter

7. Claims 14-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach or make obvious: the system according to claims 12 or 13, wherein the control unit includes: dynamic model behavior correcting means for inputting at least a desired manipulated variable, and based on a dynamic model which outputs a desired behavior of the robot, that is a plant, such that the desired manipulated variable is satisfied,

correcting the behavior of the dynamic model, by additionally inputting a correction amount of the desired manipulated variable determined in response to an error in the quantities of state of the dynamic model and the robot to at least the dynamic model; and h. control means for controlling operation of the drive motor so as to follow the behavior of the dynamic model; and the self-diagnosis means self-diagnoses that the quantity of state is an abnormal value when the error in the quantities of state of the dynamic model and the robot exceeds a predetermined value; or system according to claims 12 or 13, wherein the robot has at least a body and a plurality of leg linkages each swingably connected to the body through a joint and each connected with a foot at its distal end through a joint, the internal sensor includes an inclination sensor that generates an output indicative of an inclination of the body of the robot relative to a vertical axis, and the self-diagnosis means self-diagnoses that the inclination sensor is abnormal when the output of the inclination sensor is not within a predetermined range; or the system according to claims 12 or 13, wherein the robot has at least a body and a plurality of leg linkages each swingably connected to the body through a joint and each connected with a foot at its distal end through a joint, the internal sensor includes an angle detector that generates an output indicative of at least one of an angle, angular velocity and angular acceleration of the joints, and the self-diagnosis means self-diagnoses that the angle detector is abnormal when the output of the angle detector is not within a predetermined range.

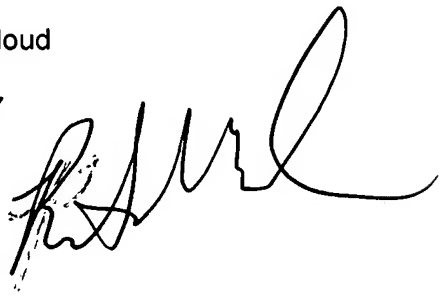
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renata McCloud whose telephone number is (571) 272-2069. The examiner can normally be reached on Mon.- Fri. from 5:30 am - 2pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-2800 ext. 37. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Renata McCloud
Examiner
Art Unit 2837



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